



FINAL MEETING SUMMARY

HANFORD ADVISORY BOARD

Tank Waste Committee

January 9, 2019

Richland, WA

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<p><i>This is only a summary of issues and actions discussed at this meeting. It may not represent the fullness of represented ideas or opinions, and it should not be used as a substitute for actual public involvement or public comment on any particular topic unless specifically identified as such.</i></p>

Opening

Bob Suyama, Benton County and Tank Waste Committee (TWC) Chair, welcomed committee members and introductions were made. The November 2018 meeting minutes¹ were approved by consensus.

Announcements

James Lynch, U.S. Department of Energy (DOE) Office of River Protection (ORP) and Deputy Designated Federal Officer (DDFO) informed members of the partial government shutdown affecting the Tri-Party Agreement (TPA) Agencies. Department of Energy has funding for the fiscal year. However, the Environmental Protection Agency (EPA) is furloughed and not in attendance. James also provided members notification of the travel restriction that will affect members. Federally funded travel is currently only being approved in the interest of national security. Due to the restriction, there may be impacts to the February Board meeting.

Lindsay Strasser, Hanford Advisory Board (HAB/Board) Facilitator reminded members, Agency liaisons and contractors to sign in prior to leaving the meeting.

Double Shell Tank (DST) Inspection Technology

Bob Suyama, TWC Chair, introduced the topic of DST Inspection Technology. Bob provided an introduction of Dusty Stewart, U.S. Department of Energy, Office of River Protection (DOE-ORP) and Karthik Subramanian, Washington River Protection Solutions (WRPS). Key points from today's presentation² included:

- One of the key aspects of a good structural integrity program is being ahead of the program. Any changes that need to be made to corrosion control factors or inspection techniques/frequencies have to be done ahead of time.
- The corrosion control program has a waste chemistry specification. The chemistry specification was established through 40-50 years of experimental work that was done on carbon steel. Measuring was done not only for general corrosion but also for leak integrity. Due to the complex chemistry, the corrosion control program is far more rigorous than what you will see in industry. The program establishes loads of corrosion control that are meant to prevent the initiation of corrosion, not to manage corrosion.
- Inspection programs are designed to ensure the corrosion prevention techniques are working. Inspections at some frequency provide information on how the waste chemistry, specifications, and airflow are maintaining the tanks.

¹ [November 7, 2018 TWC Final Meeting Summary](#)

² [Hanford Double Shell Tank \(DST\) Tank Bottom Inspection Development](#)

- Visual inspections of tank bottoms were completed over summer of 2018. Air slots were placed within the refractory pad to cool the tank and provide air circulation. The air slots provide access for visual inspections and eventually will provide access for volumetric inspections.
- Tank AP-107 was inspected with the Adaptive Energy System and the Veolia/Inuktun System. Slide 11 shows how the main crawler was deployed within the annulus and onto the primary wall. The main crawler is magnetically coupled to the primary wall.
- On-board cameras allow for ease of operator crawler navigation.
- Inuktun System development is in process. DOE-ORP is working on getting a transducer installed that will provide volumetric measurements of the steel. In addition, data and pictures will be provided based on the thickness of the steel.
- DOE-ORP is always looking to improve technology. ORP is looking at completing field-testing for the volumetric measurement within the next year.

Agency Perspective

Steve Lowe, Washington State Department of Ecology (Ecology) provided Ecology's perspective on the Double Shell Tank Integrity Program. Ecology feels that the new techniques developed to investigate the underside of the tanks by DOE-ORP are a good thing. The techniques developed have been proven to be effective. Ecology is concerned about having to store waste in the tanks for long period of time. The more that can be understood about the condition of the tanks, the better. Storing waste for an extended period of time has not always been a high priority for the tanks. It is becoming more apparent that waste will need to be stored for a long time. Anything that can be done to understand more about the condition of the tanks is a very good thing.

Committee Member Questions (Q), Responses (R), and Comments (C):

Note: This section reflects individual questions, comments, and agency responses.

Q: "All the DSTs have air slots. Will the size of those air slots allow you to use these techniques in any of the tanks?"

R: "Slide 5 shows the layout of the air slots. That layout is typical of a DST. There are 27; all but AY farm are like that. Typically, air slots are 2.5 inches tall and 2.5 inches wide at the top. They taper down to 1 inch wide at the bottom. It is not exactly uniform. The two tools I talked about fit within those dimensions I talked about. Everything we do in the future has that limitation to it. The other design of the air slots in the AY tank farms is like concentric circles. There happens to be a tight 90-degree turn. It is tough to get to the center when we go to inspect. We are 100% confident that we will be able to get to the next concentric circle. That means we would be able to inspect over 70% of the tank easily."

R: “This is not easy by any stretch. We are going to learn as we are moving along. This is not something people have not tried for many decades. This is the first time this has been successful. The volumetric inspection parts are even harder. As we get into each tank, we are going to learn and get better. We are going to continue to develop tools to get there. This is not going to be an easy trip and hasn’t been for a long time.”

C: “Since you know what it looks like for the inside, it is really valuable to know what it looks like from the underside to see if you are seeing the same thing. If there is anything we can do to encourage that, let us know.”

Q: “I am really impressed that you were able to get all the way through. However, on slide 10, you were not able to get all the way through. I was wondering if you know what happened in air slot 31.5 that caused you not able to get around the bend?”

R: “That was the first hole we went down. We had to back out as we weren’t able to make the turn. We think it’s because we had a zip tie on the tether in the annulus that created some tension. In future evolution, we took that zip tie off. It managed to travel through the slots in all the other risers.”

Q: “What is the tradeoff of having data and the new data? Does it say that we need to look further at each individual tank to go after more data?”

R: “The only tank we have visual data on is AP-107. Everything else is testing and development. As we get more data, we will decide if we want even more. We will make that decision as we go.”

Q: “Since you are doing other techniques besides this, if you get an anomalous result, can you let the TWC know? It is important for this committee to have a better understanding.”

R: “Absolutely.”

Next Steps: The next update on DST Inspection Technology is estimated for the end of FY2019.

A & AX Tank Farm Construction Update

Bob Suyama, TWC Chair introduced Vanessa Turner, U.S. Department of Energy, Office of River Protection and Doug Greenwell, Washington River Protection Solutions (WRPS). Key points from today’s presentation³ include:

- There are several drivers for retrieval of A/AX Farms. Consent Decree milestones B-2 and B-3 are legal drivers for retrieval of A & AX Farms. Tri-Party Agreement (TPA) milestones M-045-15 and M-045-86 are also drivers for retrieval.

³ [A/AX Retrieval Project Status January 2019](#)

- AX-Tank Farm has four, million gallon tanks made up primarily of Saltcake.
- A Tank Farm has six, million gallon tanks made up primarily of Saltcake. Tanks 241-A-104 and 241-A-105 are assumed leakers. As these tanks are assumed leakers, they provide additional challenges when retrieving the Farms.
- A & AX Farms RAD inventory is about 14.5 million curies. There are about 1,000 curies of Technetium (Tech) 99.
- Deployable technologies projected to be used for retrieval include modified sluicing, high-pressure water, chemical dissolution, and the installation of three extended reach sluicer systems (ERSS) per tank.
- During FY14-FY16, project focus included design, procurement, characterization and the footprint prep phase of the project.
- The field execution phase has ramped up between FY17 and the present.
- The FY19 scope include:
 - Complete installation of retrieval system in AX-102
 - Commence retrieval operations in AX-102
 - Commence retrieval equipment installation in AX-104
 - Continue LLE removals from both A-Farm and AX-103
 - Continue installation of A-Farm ventilation system

Agency Perspective

Jim Alzheimer, Washington State Department of Ecology provided Ecology's perspective on the A & AX Tank Farm Construction. A lot of progress has been made in C Farm learning about how to do things better in A & AX Farms. AX Tanks were the last of the single-shell tanks (SSTs) made. They are probably the best of the SSTs. AX has presented some unique challenges compared to C Farm. It is hard to get some of the long-length equipment out of the risers. Each time we go to a new farm, it presents some new challenges. AX is the most likely to be retrieved without a release from the tank. From a construction standpoint, A Farm is the worst. Jim is encouraged that the work in A & AX is going well. Having new infrastructure will make things much more efficient and productive. Picking A Farm now will allow Ecology to understand a lot better how we are going to do closures. Retrieval of tanks won't begin until the Waste Treatment Plant (WTP) is up and running. A Farm may be a hard challenge. However, it is good to learn how to approach the really hard ones now that there is not enough capacity in the DST systems.

Committee Member Questions (Q), Responses (R), and Comments (C):

Note: This section reflects individual questions, comments, and agency responses.

Q: “What is the acceptance criteria going to be if you run into a tank and find retrieval is not achievable?”

R: “Working with Ecology, the TPA agreement and consent decree lays out a process how we plan these projects working closely with our stakeholders. It establishes a volumetric target for retrieval that we are shooting for. It also recognizes that we could run into tanks that we can’t achieve that goal. There is a process for deciding have we fully exercised the technologies that we deployed to the best of their ability? Should we progress to a different technology? Do you reach a point where that we have reached the end of current technology and we need to move on? That is laid out in the process and works quite well.”

Q: “Are there some areas that are pretty heavily contaminated within this tank farm?”

R: “The short answer is yes. What I would tell you is we are doing a performance assessment (PA) of the farm. This includes all of the transfer lines and equipment. The totality of all of the contamination involved with historical operation. This is where we take a look at things like small vessels and vessels. We look at the cumulative impact to the environment and human health. We determine what warrants further cleanup beyond retrieval. The effort that Vanessa is talking to is about retrieving the content of those tanks. There is a whole separate effort ongoing to determine long-term cleanup efforts.”

C: “I ask that you allow us to have knowledgeable people like Vince Panesko participate with you as you go through the performance assessment. As you define your PA process, I ask that you allow the public to provide input before it is finalized.”

Q: “Should the HAB write a letter to request HAB participation in the PA?”

R: “We are not the PA experts. I am not sure of the process or what the HAB’s involvement has been in the past. Why it appears to have been broken down. We can get that information and get back to you.”

C: “The process is pretty rigorous. I don’t know that we can get involved with the approval. We can certainly get involved in the process.”

Next Steps: The next update on A/AX Farms is estimated for Fall of FY2019.

Test Bed Initiative

Bob Suyama, TWC Chair introduced Rob Hastings and Janet Diediker, U.S. Department of Energy, Office of River Protection. Key points from their presentation⁴ include:

- The top priority for DOE-ORP remains Direct Feed Low Activity Waste (DFLAW). In parallel, ORP is working on the Test Bed Initiative (TBI) as a potential future opportunity for treating waste.

⁴ [Hanford Tank Waste Strategy: Test Bed Initiative- Phase II](#)

- The funds used for the Test Bed Initiative are from the U.S. Department of Energy Headquarters (DOE-HQ). Funds are identified as technology, development and demonstration funds.
- DOE-ORP continue to collaborate with Ecology to develop and execute successful permitting strategies.
- The demonstration is an engineering scale demonstration of the filtration system, the ion exchange and the media.
- The Test Bed Initiative is approaching 60% design.
- A safety basis evaluation has been completed identifying a minor modification to the Tank Farm documented safety analysis (DSA).
- The TBI proves that DOE-ORP has the technical approach. It also maximizes the use of existing infrastructure and off the shelf components.
- DOE-ORP is preparing a 60-day Congressional report. The report is at DOE-HQ going through a review and approval process.
- The Test Bed Initiative provides a near-term opportunity to evaluate a path to move the tank waste mission forward.

Agency Perspective

Cheryl Whalen, Washington State Department of Ecology provided Ecology's perspective on the Test Bed Initiative – Phase II. Ecology has been working with DOE-ORP. There are currently a few issues to work out. The project is on hold pending the report to Congress. ORP is not allowed to locally spend money on the project until Congressional approval is received. Until approval is received, regulatory requirements are on hold. Ecology is always looking forward to getting waste off the Hanford Site.

Committee Member Questions (Q), Responses (R), and Comments (C):

Note: This section reflects individual questions, comments, and agency responses.

Q: "Is 2,000 a number based on the projection of the ability to demonstrate a spectrum of waste? Or was it based on the ability to treat it? Is it going to prove what you think it's going to prove?"

R: "It's a little bit subjective. Phase I was 3 gallons. There were conversations between ORP, DOE-HQ and WRPS regarding how far can we go without spending too much money as far as volume to be processed. It is going to prove what we think the outcome is going to be. However, it is not representative of the entire Tank Farms. Each tank is unique. Based on the success of

this, we believe it's going to be successful. Ideally, there will be another phase that will help us as a department to identify if this is the right value."

Q: "The ion exchange cesium removal system. Is this identical to the Tank-Side Cesium Removal (TSCR) that DFLAW will be using?"

R: "It's not identical because it's a much smaller scale. The concept of the ion exchange filter is pretty much the same."

Q: "What is the cost per gallon to process the waste?"

R: "I don't have that specific information. We have not calculated that."

C: "I would like to see the actual cost. Would the money be better spent somewhere else?"

Q: "Where does this get worked out with Ecology? Are we looking at new milestones if there is going to be implementation of this down the road?"

R: "On a larger scale, it will be permanent just like TSCR."

R: "On a larger scale, I believe we would start tapping into milestone areas. That would be a pretty significant change to what our status is today. We are not there yet today."

Next Steps: A status update on the Test Bed Initiative is estimated for March 2019.

National Academy of Sciences Meeting Debrief

Bob Suyama, TWC Chair introduced the topic of National Academy of Sciences Meeting Debrief. Pam Larsen and Susan Leckband provided members an overview of items discussed at the meeting. Key points from the debrief include:

- The National Academy of Sciences meeting was held November 29-30, 2018 in Richland, WA.
- Susan Leckband and Pam Larsen both testified at the National Academy of Sciences meeting.
- Congress directed the Department of Energy to engage the National Academy of Sciences to do two studies.
 1. Technology needs for the Environmental Management Program
 2. Supplemental Treatment for Hanford's Low Activity Waste
- Presentations were provided on grouting tank waste and vitrification of tank waste.

- Susan provided education on the Hanford Advisory Board.

Committee Member Questions (Q), Responses (R), and Comments (C):

Note: This section reflects individual questions, comments, and member responses.

Q: “What is the final result of all of these studies and meetings? How is this going to come together?”

R: “They are reporting to DOE and Congress. I was able to get their almost final draft which is what I used to prepare my comments. The topics were cost of waste form processes, regulatory compliance, and one other category. I commented on what was in the draft report.”

C: “It was pretty clear yesterday they have a ways to go. They are looking for what to do for the supplemental LAW treatment. Our LAW plant is not big enough to treat all of the LAW waste. They are looking at supplemental treatment for waste that currently does not have a path. They are looking at steam reforming, grout and vitrification.”

C: “I think that unless there is a change from my experience in the past, The National Academy is authorized to provide advice not direction. The short answer is in respect to what the report says; someone from the DOE-HQ should go through there and select those pieces of advice that support whatever parts of their position.”

Next Steps: The TWC would like to have Ecology provide additional information on the phrase “as good as glass.”

Review of Draft Advice on DOE’s Interpretation of Non High-Level Waste

Bob Suyama, TWC Chair introduced the topic of DOE’s Interpretation of Non High-Level Waste. Bob communicated that with the cancelation of the December Board meeting; Susan Leckband sent a letter on behalf of the Board including the draft advice. The letter noted that the advice was not consensus. However, providing the document in letterform allowed the HAB to submit their draft advice to meet the deadline of the public comment period.

James Lynch expressed his appreciation to the Executive Issues Committee (EIC) for their flexibility working through the recent interruptions. He noted that this process was a little bit different as the notice came from DOE-HQ. James communicated that although this advice is directed to DOE-HQ, it will also be considered at the local level too.

Bob opened the discussion for members to provide general thoughts and their preferred path forward for the draft advice.

Committee Member Questions (Q), Responses (R), and Comments (C):

Note: This section reflects individual questions, comments, and agency responses.

Q: "Oregon turned out their letter and it's pretty thick. It's very detailed. I can see a lot of Jeff, Tom and Ken in here. I read the paper this morning and Governor Inslee turned out a letter. Was very negative on this new definition. The question is, this was approved by the TWC using our email process. I am assuming we still want this to go to the next Board meeting and approved as advice? It will be coming after the comment period."

R: "Absolutely."

C: "I have a comment about this going to the Board. I have no objection with this going to the full Board. I have no objection to this going to DOE as advice. However, I want to point out to you that the purpose of this was the comment on the new proposed definition of DOE's waste within the tank. When we look at our advice, we don't come down in favor of roman numeral I or II. We don't come down against roman numeral I or II in a strong, clear cut manner. That leaves us in the position to sending to DOE that some people could say that you didn't disapprove. I would much prefer if we withdraw this and not send it to the Board. However, I will not do that since time and events have overtaken it anyway. Keep in mind, not coming down in favor or against we are left in the position of potentially approving something we don't want to approve of."

C: "I didn't see it like that. I have been looking at it a lot. I don't think it's that black and white. I think we should have it in front of us at the full Board. We should comment on exactly what DOE asked us to comment on."

C: "We need a trail. We need a picture for the public. If we are going to be responding in the future to this, people need to know where we came from."

C: "DOE-HQ has not defined how they are going to use this and it's making me and a lot of people nervous."

C: "I think that it's important that whatever we do puts qualifiers on how it can be used. I think this makes a big step in that direction. Personally, I am in favor of dumping the definition as we have lived with it for 40 years and it sucks. I don't want anybody to have free reign to change that. This actually puts more constraint on the system than it has now. I think it's a valuable thing to offer up. No matter how they define it, you still have to go through these hoops to get it done."

Next Steps: The facilitation team will collect public comments on DOE's Interpretation of Non-HLW from those stakeholders who would like to have them distributed to the TWC. Public comments will be distributed to the TWC upon receipt. In addition, the draft advice will move forward to the next full Board meeting.

Open Forum/Committee Business

Bob Suyama introduced the topic of Open Forum/Committee Business. He explained to TWC members that the open forum provides an opportunity for members to discuss topics that may not be on the agenda or on the HAB's work plan. Committee business included the following:

3 Month Work Plan

The Tank Waste committee members discussed updates to the TWC's 3-month work plan. Updates include the following:

- Request for Glass Formation presentation
- Request for 242 Evaporator update
- Review of FY2021 Budget Priorities draft advice
- Update on Direct Feed Low Activity Waste (DFLAW)
- Request for Critical Infrastructure update

FY2021 Budget Priorities

Members of the TWC committee took the opportunity to provide input on FY2021 budget priorities. These budget priorities will be incorporated in the FY2021 budget advice put together by the Budgets & Contracts committee.

TWC Chair & Vice-Chair Nominations

Nominations have opened up for Chair and Vice-Chair of the Tank Waste committee. Bob Suyama has been nominated to serve as Chair and Steve Wiegman has been nominated to serve as Vice-Chair. Nominations will remain open until January 24, 2019. If a member is interested in serving in a leadership capacity, he or she may self-select.

Attachments

Attachment 1: Hanford Double Shell Tank (DST) Tank Bottom Inspection Development

Attachment 2: A/AX Retrieval Project Status

Attachment 3: Hanford Tank Waste Strategy: Test Bed Initiative – Phase II

Attachment 4: Tank Waste Committee Draft Advice; DOE's Interpretation of Non-HLW

Attendees

Board Members and Alternates:

Tom Sicilia, Alternate	Bob Suyama, Member	Shelley Cimon, Member
Steve Wiegman, Member	Vanessa Turner, DOE-ORP	Alex Klementiev, Alternate
Tony Umek, Member	Helen Wheatley, Member	Pam Larsen, Member
Emmett Moore, Member	Rebecca Holland, Member	Susan Leckband, Member

Tom Carpenter, Alternate (Phone)	Dan Solitz, Alternate (Phone)	Liz Mattson, Member (Phone)
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Others:

Tom Rogers, WDOH	JoLynn Garcia, DOE-ORP	James Lynch, DOE-ORP
Jeff Rambo, DOE-ORP	Rich Evans, Office of Senator Cantwell	Steve Lowe, Ecology
Annette Carey, Tri-City Herald	Karthik Subramanian, WRPS	Ginger Wireman, Ecology
Elaine Diaz, DOE-ORP	Theresa Howell, Ecology	Mark McKenna, WRPS
Jim Alzheimer, Ecology	Steve Pfaff, DOE-ORP	Dana Cowley, MSA
Lindsay Strasser, ProSidian	Sherri Schatz, ProSidian	Fred Yapunch, Avantech
Jim Braun, Avantech	Chris Burke, WRPS	Rob Hastings, DOE-ORP
Cheryl Whalen, Ecology	Kelsey Shank, The Edge	Paula Call, DOE-ORP
Jeff Lyon, Ecology	Michael Turner, MSA (Phone)	Dusty Stewart, DOE-ORP
Janet Diediker, DOE-ORP	Michael Nerrado	Ruben Mendoza, WRPS
Jason Gunter, WRPS	Doug Greenwell, WRPS	Abby Zilar, DOE-ORP